Cooper Road and Commerce Avenue

Boundaries:

The Cooper Road and Commerce Avenue WQARF Registry site consists of a contaminated groundwater plume located in the vicinity of Commerce Avenue near Cooper Road, in Gilbert, Arizona. The site is bounded to the north by Guadalupe Road, to the south by the Western Canal, to the east by the Gilbert Wastewater Treatment Plant and to the west by Cooper Road.

Site History:

- Unichem (aka United Chemical Corporation) purchased the site in 1977 and constructed facilities for the production of copper sulfate from scrap metal. Processing operations are believed to have started in late 1977 or early 1978. A drywell was constructed on site in 1977 in a triangular-shaped earth sump near the center of the concrete pavement that served as a foundation for the processing plant. The drywell was constructed to a reported depth of 79 feet. The copper sulphate production process used aqueous ammonia, lix, (a petroleum-based compound) blended with Kerosene, and sulfuric acid to extract copper from the scrap metal. A diesel fired boiler with heat exchangers was used to heat the process stream before the crystallization of the copper sulfate. PCE was reportedly used as a coolant, possibly in the crystallization process.

- Unichem discontinued operations at the site proir to 1983, and in early 1983 began to dismantle and sell some of the plant equipment. In July 1983, Unichem sold the property to Aztec Resources, which operated a gold extraction plant at the site. The process reportedly used cyanide baths to extract gold from scrap materials and mine tailings. In September 1984, Aztec Resources defaulted on their payment and the property was reacquired by Unichem.

- There have been several phases of investigations at the Unichem site. Operations on the eastern portion of the site, parcel 302-15-025B, were investigated by the ADEQ hazardous waste inspections unit in 1989. Several shallow soil samples were collected from the property. Samples collected from the sump of the drywell detected cyanide above the residential Soil Remediation Standard (SRL) for hydrogen cyanide of 11 milligrams per kilogram (mg/kg). Arsenic, lead and copper were also present above the respective residential SRLs of 10, 400 and 2,800 mg/kg.

- 1990, Geraghty & Miller , Inc., collected soil samples from a depth of twelve inches at two locations on the western portion of the site, parcel 302-15-025A. Analytical results indicated arsenic was present above the SRL. PCE and copper were also detected, but below residential SRLs. A soil vapor survey was also conducted indicating high concentrations of PCE were present in the soil vapor on the east side of this parcel at a depth of four to five feet below ground surface (bgs). A deep boring on the eastern side of this parcel detected PCE above the residential SRL of 53 mg/kg at depths of five and 20 feet bgs. Total petroleum hydrocarbons (TPH) were also detected in the deep borings at this property.

- In 1990, Simon-EEI Inc., collected soil samples from 24 boring on the eastern portion of the Unichem site. No concentrations appear above residential soil remediation levels (SRLs) but QA/QC concerns exists with the volatile organic compound (VOC) data because soils were collected in glass jars and volitization of the contaminants may have occurred before analysis. PCE was detected in 11 of the borings. 1,1,1-TCA was detected in five borings. TPH was detected in 14 borings. Arsenic was detected in all borings but may be at concentrations near normal background concentrations. Elevated copper concentrations were detected in boring # 24, near the drywell, at depths of five and twenty feet bls.

- In early 1994, cyanide contaminated soils in the area of the drywell were excavated to a depth of 3 feet and disposed by HYDRO-SERCH, Inc. Also in 1994, HYDRO-SEARCH, Inc., installed three groundwater monitor wells at the site. Soil samples were collected approximately every 5 feet until the water table was encounter at approximately 130 feet bgs. Arsenic, chromium and lead were detected above residential SRLs. No minimum GPLs were exceeded. Groundwater samples detected PCE above the Aquifer Water Quality Standard (AWQS) of 5 micrograms per liter (ug/l). Groundwater samples were also analyzed for cyanide, BETX and TPH and were non-detect. Arsenic and barium were detected in the groundwater samples but below their AWQS.

- Also in 1994, HYDRO-SEARCH, Inc. drilled an exploratory borehole to a depth of 99 feet bgs within the on-site drywell. The drywell was constructed with a sediment chamber formed with concrete rings to a depth of approximately 10 feet bgs. The drywell was apparently constructed with a drainage chamber containing gravels to a depth of 42 feet bgs. Native soils were apparently encountered at a depth of approximately 50 feet. During drilling, soil samples were collected every five to 10 feet. Arsenic, chromium TPH and mercury were detected above residential SRLs. PCE was detected above residential SRLs and the minimum GPL of 1.3 mg/kg. HYDRO-SEARCH, Inc. intended to conduct vapor extraction on the drywell and backfilled the boring to a depth of 50 feet bgs and installed a 50 foot section of 4 inch, 0.040 slot, PVC screen. No vapor extraction was conducted at the site.

- Groundwater monitoring at the site contuinued through 1996 and PCE was detected at concentrations as high as 6,600 ug/l in monitor well MW-101. During monitoring, the direction of groundwater flow varied from eastery to westerly at the site.

- In 2001, groundwater samples collected from a Town of Gilbert monitor well, G-9, located north of Commerce Avenue on Cooper road detected PCE at concentrations above the AWQS. Subsequent monitoring has also detected Trichloroethene (TCE) above the AWQS of 5 ug/l.

- In 2002, ADEQ sampled monitor wells MW-102 and MW-103. At this time, the upper portion of the casing of MW-101 was found to be damaged. The concentrations of PCE in the two monitor wells sampled were well above the AWQS.

- In 2003, ADEQ installed two additional monitor wells north of monitor well G-9. Monitor well 104S was screened from 115 to 165 feet. PCE concentrations in groundwater samples from this monitor well during 2003 and 2004 were above the AWQS. TCE concentrations have also been detected above the AWQS. Monitor well 104D was screend in a sand zone from 580 to 610 feet. This zone is equivalent to the upper screened interval in the Town of Gilbert public supply well # 15. Toluene, benzene and xylene have been detected in MW104D, but below AWQS.

- In 2005, ADEQ conducted quarterly groundwater monitoring at the site. In general, concentrations of PCE in the groundwater have been much lower than concentrations previously detected at the site. Groundwater samples and groundwater elevation data were collected from on-site monitor wells, ADEQ's off-site monitor wells and monitor wells belong to the Town of Gilbert. Groundwater flow direction was difficult to determine based on the groundwater elevation data collected. Surface elevations of all wells were resurveyed in August 2005 and significient elevation differences were noted in the on-site and Town of Gilbert monitor wells.

Site Status:

- ADEQ's immediate plans are to conduct an early response action (ERA) evaluation at the site. During this ERA evaluation, ADEQ plans to investigate the depth of groundwater contamination and determine the concentration of PCE in the soil and soil vapor near the drywell. ADEQ also plans to define the extent of surface soil contamination indicated by previous samples collected from parcels 302-15-025A and 025B.

- A remedial investigation has not been initiated at the site.

Site Hydrogeology:

- The site is located within the eastern Salt River Valley (SRV) sub-basin. The eastern SRV is comprised of basin-fill deposits overlain by stream alluvium. Basin-fill deposits have been subdivided into upper and lower basin-fill. The upper basin-fill is generally composed of unconsolidated to moderately consolidated alluvial deposits, grading to finer grained deposits towards the basin interior. The upper basin-fill may be as thick as 1,000 feet in the eastern SRV. Stream alluvium has been deposited by the ancestral Salt River drainage system and consists primarily of coarse unconsolidated deposits. Additionally, finer-grained flood plain deposits may be associated with the stream alluvium. Based on monitor wells drilled near the site, it appears the stream alluvium is present to 270 feet bgs. Finer grained sediments of the upper basin-fill are present to a depth of at least 750 bgs. Depth to groundwater is approximately 130 feet. During monitoring from 1994 to 1996, the direction of groundwater flow varied from eastery to westerly at the site.

Contaminants:

The current contaminants of concern in the groundwater at the site include PCE and TCE. Contaminants of concern in the soils at the site include arsenic, chromium, copper, TPH, mercury and lead. Contaminants of concern at the site may change as new data become available.

Public Health Impact:

No irrigation, drinking water or other production wells have been impacted by the volatile organic compound contamination from the site. However, PCE, TCE are present in the groundwater monitoring wells at or near the site at concentrations above the AWQS.

Community Involvement Activities:

A community advisory board will be formed when a remedial investigation is initiated at the site.

Information Repositories:

Interested parties can review site information at the ADEQ main office located at 1110 West Washington Street, Phoenix. With 24 hour notice, an appointment to review relating documentation is available Monday through Friday from 8:30 a.m. to 4:30 p.m., at the ADEQ Records Management Center, 1110 W. Washington Street in Phoenix, Arizona. Please contact (602) 771-4380 or (800) 234-5677 to schedule an appointment to review these documents.

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*In Arizona, but outside the Phoenix area, call toll-free at (800) 234-5677.